

## WHAT IS CLAIMED IS:

1. A magnetic sensor comprising a magnetoresistance effect element that contains a pinned layer and a free layer, said magnetoresistance effect element having a resistance value that changes in accordance with a relative angle formed by a magnetization direction of the pinned layer and a magnetization direction of the free layer,

said magnetic sensor being formed in such a manner that a plurality of said magnetoresistance effect elements are provided on a single chip, and the pinned layers of at least two of said plurality of magnetoresistance effect elements have magnetization directions that cross each other.

2. A method of producing a magnetic sensor comprising a magnetoresistance effect element that contains a pinned layer and a free layer, said magnetoresistance effect element having a resistance value that changes in accordance with a relative angle formed by a magnetization direction of the pinned layer and a magnetization direction of the free layer, said method comprising the steps of:

forming a layer containing a magnetic layer that will become said pinned layer in a predetermined configuration on a substrate;

forming magnetic-field-applying magnetic layers for applying a magnetic field to the layer containing the magnetic layer that will become said pinned layer;

magnetizing said magnetic-field-applying magnetic layers; and

pinning the magnetization direction of the magnetic layer that will become said pinned layer with a magnetic field produced by a residual magnetization of said magnetic-field-applying magnetic layers.

3. The method of producing a magnetic sensor according to claim 2, wherein the step of forming said magnetic-field-applying magnetic layers is a step of forming said magnetic-field-applying magnetic layers so as to sandwich the layer containing the magnetic layer that will become said pinned layer in plan view.

4. The method of producing a magnetic sensor according to claim 3, wherein the magnetization direction of said magnetic-field-applying magnetic layers is different from a direction of the magnetic field produced by said residual magnetization.

5. A method of producing a magnetic sensor comprising a magnetoresistance effect element that contains a pinned layer and a free layer, said magnetoresistance effect element having a resistance value that changes in accordance with a relative angle formed by a magnetization direction of the pinned layer and a magnetization direction of the free layer, said method comprising the steps of:

preparing a magnet array constructed in such a manner that a plurality of permanent magnets are arranged at lattice points of a square lattice, where a polarity of a magnetic pole of each permanent magnet is different from a

polarity of other magnetic poles that are adjacent thereto and spaced apart therefrom by the shortest distance;

disposing a wafer in which a layer containing a magnetic layer that will at least become said pinned layer has been formed, above said magnet array; and

pinning the magnetization direction of the magnetic layer that will become said pinned layer by using a magnetic field formed between one of said magnetic poles and another of said magnetic poles that is adjacent thereto and spaced apart therefrom by the shortest distance.

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